

**REMARKS**

Please reconsider the application in view of the above amendments and the following remarks. Applicant thanks the Examiner for indicating that claims 4-7, 9, and 10 contain allowable subject matter.

**Disposition of Claims**

Claims 1-11 were pending in this application. By way of this reply, claims 1-11 have been amended, and claims 12-16 have been newly added. Thus, claims 1-16 are now pending. Claims 1, 4, 6, 9, and 16 are independent. The remaining claims depend, directly or indirectly, from claims 1, 4, 6, 9, and 16.

**Drawings**

Applicant respectfully requests that the Examiner indicate acceptance of the formal drawings filed on January 14, 2005.

**Claim Amendments**

Claim 1 has been amended to include a limitation of a buffer layer adjacent to the light emitting member. No new matter has been added by way of this amendment as support for this amendment may be found, for example, in Fig. 1 and the associated text of the present application.

Claims 4, 6, and 9 have been rewritten in independent form and include all of the limitations of their base claims and intervening claims. Claims 5, 7, and 10 have been amended accordingly to depend from claims 4, 6, and 9, respectively. No new matter has been added by way of these amendments.

Claims 1-11 have been amended to correct minor informalities and to improve clarity. No new matter has been added by way of these amendments.

New claims 12-15 have been added to recite a limitation of a strained layer superlattice (SLS) clad layer. No new matter has been added by way of these amendments as support for these amendments may be found, for example, in paragraph [0015] of the Publication of the present application.

New claim 16 has been added to recite a method of manufacturing a GaN-based semiconductor compound semiconductor device as disclosed in the Specification as filed. No new matter has been added by way of this amendment as support for this amendment may be found, for example, in claim 11, and in paragraphs [0022], [0024], and [0025] of the Publication of the present application.

#### **Allowable Subject Matter**

Claims 4-7, 9, and 10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. By way of this reply, claims 4-7, 9, and 10 have been amended as suggested by the Examiner, and thus are now in condition of allowance. Accordingly, withdrawal of the objection is respectfully requested.

#### **Rejections under 35 U.S.C. § 102**

Claims 1 and 8 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,851,905 ("McIntosh"). Independent claim 1 and dependent claim 8 have been amended by way of this reply to clarify the present invention recited. To the extent that the rejection may still apply to amended claims, this rejection is respectfully traversed.

The present invention is directed to a GaN-based device. Amended independent claim 1 requires, in part, a buffer layer adjacent to the light emitting member. As evident from Fig. 1 and the associated text of the present application, the AlInGaN buffer layer (22) is adjacent to the light emitting member (24), wherein the light emitting member (24) comprises a barrier layer and a well layer. McIntosh, in contrast to the present invention, discloses a buffer layer (14) that is adjacent to a substrate (15) and to a cladding layer (13a) (*see, e.g.*, McIntosh, Figs. 1-4), but *not* to a quantum well structure (barrier layers and active layers). It appears that the Examiner has incorrectly equated the buffer layer (24) of the present invention to a barrier layer (11c) of McIntosh, the latter being adjacent to an active layer and, as a matter of fact, a part of the quantum well structure.

In addition, the buffer layer (14) of McIntosh is *not* equivalent to the buffer layer (22) adjacent to the light emitting member (24) of the present invention. As described in, for example, paragraph [0023] of the Publication of the present application, the inventive feature of having the buffer layer adjacent to the light emitting member is advantageous at least in that the efficiency for supplying electrons to the well layer is improved and the number of holes moving away from the quantum well is reduced, and subsequently the light emission efficiency is improved. In contrast, as disclosed in col. 5, lines 19—22 of McIntosh, the buffer layer (14) of McIntosh is adjacent to the substrate in order to absorb lattice and thermal mismatches between the substrate and the remainder of the device. Thus, the buffer layer (14) of McIntosh, which although might resemble a buffer layer (12) of the present invention, is *not* equivalent to a buffer layer (22) adjacent to the light emitting member (24) as recited in amended independent claim 1 of the present application.

In view of the above, McIntosh fails to teach or suggest the present invention as recited in independent claim 1 of the present application. Thus, independent claim 1 is

patentable over McIntosh. Dependent claim 8 is allowable for at least the same reasons. Accordingly, withdrawal of this rejection is respectfully requested.

**Rejections under 35 U.S.C. § 103(a)**

Claims 2-3

Claims 2-3 stand rejected under 35 U.S.C. 103(a) as being unpatentable over McIntosh in view of U.S. Patent No. 6,489,636 ("Goetz"). The base claim 1 has been amended by way of this reply. To the extent that this rejection may still apply to dependent claims 2-3, this rejection is respectfully traversed.

As discussed above, independent claim 1 is patentable over McIntosh. Goetz, which is directed to an Indium Gallium Nitride smoothing structure, fails to teach or suggest the present invention as recited in amended independent claim 1 or supply that which McIntosh lacks. More specifically, Goetz fails to teach or suggest at least a buffer layer adjacent to the light emitting member. This is also evidenced by the fact that Goetz is used by the Examiner merely to provide certain Indium concentrations.

In view of the above, McIntosh and Goetz, whether considered separately or in combination, fail to teach or suggest the present invention as recited in amended independent claim 1 of the present application. Thus, amended independent claim 1 is patentable over McIntosh and Goetz. Dependent claims 2-3 are allowable for at least the same reasons set forth above. Accordingly, withdrawal of this rejection is respectfully requested.

Claim 11

Claim 11 stands rejected under 35 U.S.C. 103(a) as being unpatentable over McIntosh. The base claim 1 has been amended by way of this reply. To the extent that this rejection may still apply to dependent claim 11, this rejection is respectfully traversed.

As discussed above, independent claim 1 is patentable over McIntosh. Claim 11 depends from claim 1 and is thus patentable over McIntosh for at least the same reasons set forth above. Accordingly, withdrawal of this rejection is respectfully requested.

**Patentability of the Newly Added Claims**

Newly added claims 12-15 are dependent claims of claim 1. Claim 1, as set forth above, is patentable. Therefore, dependent claims 12-15 are also patentable for at least the same reasons as set forth above. Newly added claim 16 recites a manufacturing method for the device of claims 1 and 12, and is thus also patentable.

**Conclusion**

Applicant believes this reply is fully responsive to all outstanding issues and places this application in condition for allowance. If this belief is incorrect, or other issues arise, the Examiner is encouraged to contact the undersigned or his associates at the telephone number listed below. Please apply any charges not covered, or any credits, to Deposit Account 50-0591 (Reference Number 08228.071001).

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Respectfully submitted,

By: 

Jonathan P. Osha  
Registration No.: 33,986  
OSHA · LIANG LLP  
1221 McKinney St., Suite 2800  
Houston, Texas 77010  
(713) 228-8600  
(713) 228-8778 (Fax)  
Attorney for Applicant